



Webseminar

DATENRÄUME

23. SEPTEMBER 2025 | 14:00 UHR
MS TEAMS

Kooperationspartner



zvei
electrifying
ideas

IGR
Interessengemeinschaft
Regelwerke Technik e.V.

Bitte Mikrofon stumm schalten

- » **Aktivieren**, wenn man etwas sagen möchte, **Deaktivieren**, wenn man mit seinem Beitrag fertig ist
- » Falls Ihr Mikrofon versehentlich nicht auf stumm geschaltet ist, wird dieses zentral stumm geschaltet und muss selbst wieder aktiviert werden.



Fragen und Redebeiträge im Chat ankündigen oder die „Hand“ heben

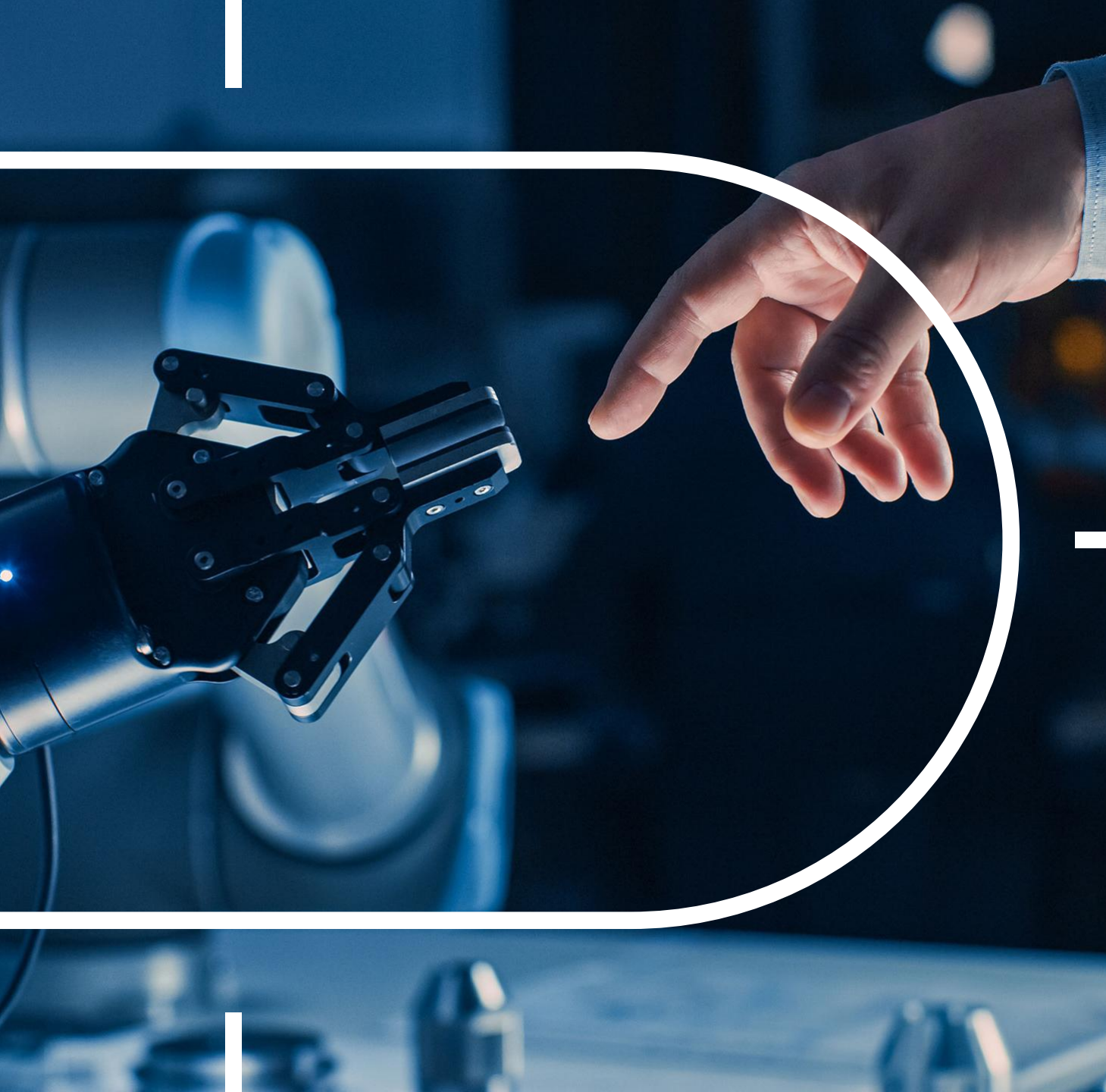
- » Falls Sie während eines Vortrages Fragen oder Anmerkungen haben, können Sie diese gerne in den Chat schreiben.
- » Am Ende der Vorträge haben wir ein Q&A-Session eingeplant. Der Moderator wird Ihnen das Wort erteilen.



Aufzeichnung des Webinars

- » Lediglich die Vorträge werden aufgezeichnet und auf VCI-online zur Verfügung gestellt.





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Process X

Datenräume für Instandhalter

Marc Birkenkamp, Jürgen Reiser, Tobias Deißler,
Sven Schiffer

VCI Webinar // 23 September 2025

Agenda

1. Introduction to Asset Administration Shell and Data Space
2. Maintenance from Operators Perspective – Today and outlook
3. Data spaces for maintenance – Perspective from the manufacturers
4. digitized \neq digital – Perspective from a CAE software developer
5. AAS and Data Space a deep dive



Das Panel



Marc Birkenkamp

E&I PCT Expert BU
CAS

Covestro AG



Jürgen Reiser

Portfolio Manager
Process Solutions

WIKA



Tobias Deißler

Product Manager

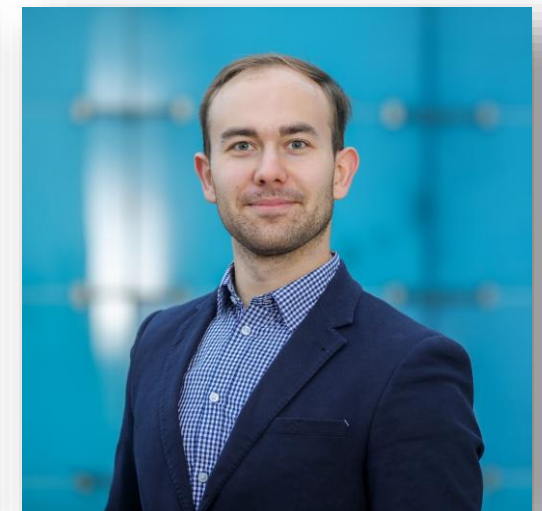
**Rösberg
Engineering GmbH**



Sven Schiffer

Energy systems and
infrastructures
Expert Scientist

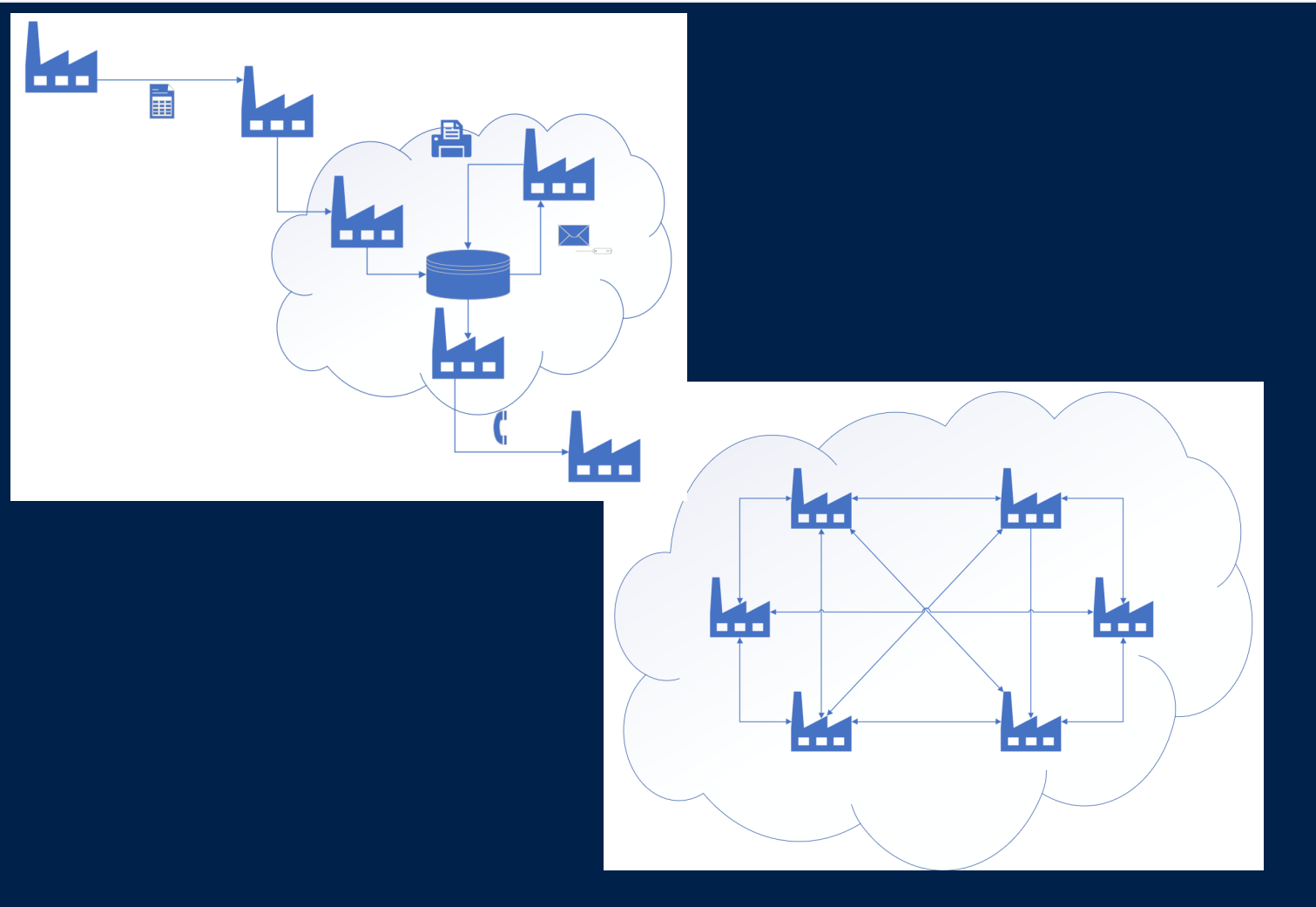
Fraunhofer IFF



01

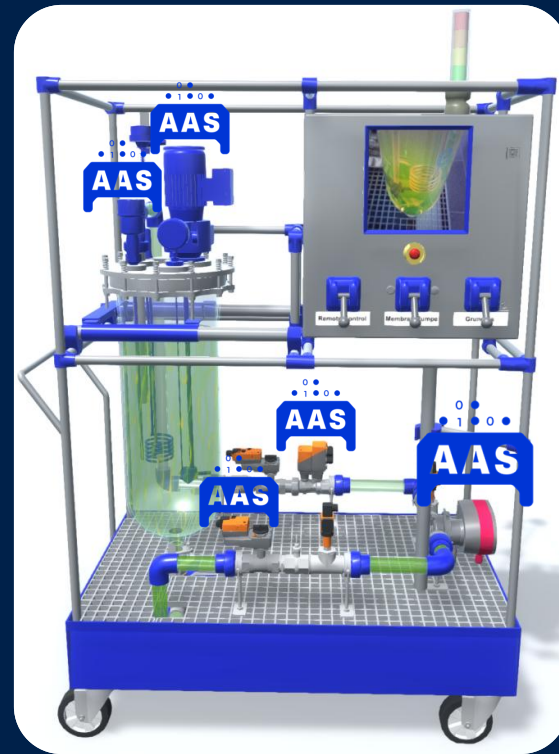
Introduction to Asset Administration Shell and Data Space

Data Space – from unstructured communication to shared data



- Transformation from different communication channels and data formats to unified way of data transfer and specific data formats
- Preservation of data sovereignty
- Strengthening cooperation
- Reduction of data silos

Asset Administration Shell – from unstructured data to unified data container and templates



- AAS as a universal data container
- Submodel Templates as examples for data structures for specific use cases
- Specification of content with IEC CDD and eCL@ASS
- Collaborative work on new submodels

02

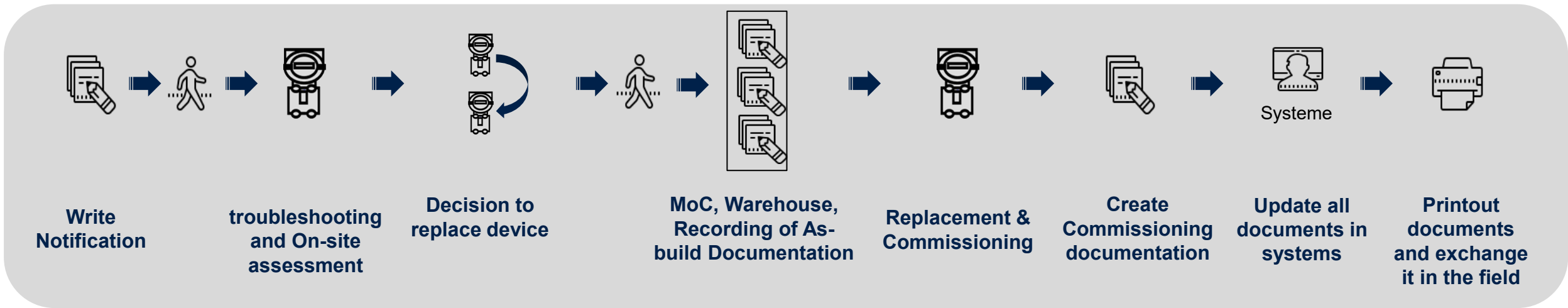
Maintenance from Operators Perspective – Today and outlook

NAMUR WG 4.1

Examples of current maintenance processes

1. Failed Device -> Error Message

- Operator recognizes device error
- Entry into SAP
- Troubleshooting in the field
- Decision to replace device -> MoC is initiated
- Documentation is mostly faulty or not completely file
- As build in field assessment (process connections, nameplate, etc.)
- Search for suitable device and remove from warehouse
- Replace device
- Fill out replacement form*
- Complete documentation is brought up to date
- If necessary, replace paper documentation on-site

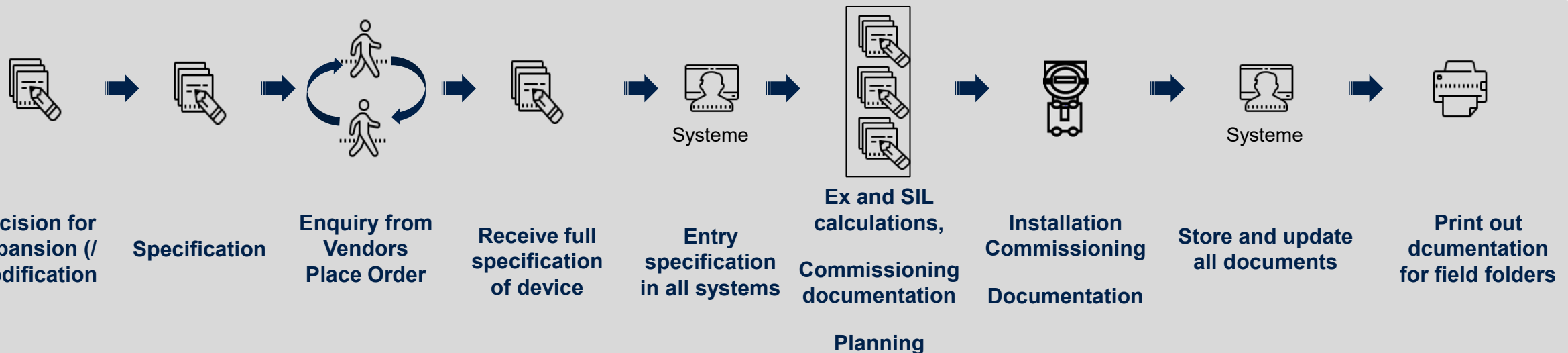


* - not 1:1 replacement: Ideally perform Ex i / SIL verification/calculation beforehand – if too urgent (night) then timely

Examples of Current Maintenance Processes

2. Planning of a New Measuring Point (Technical Location)

- IH Maintenance must create technical location in multiple systems (SAP, CAE)
- Maintenance must request corresponding process data for new technical location – creation of specification sheet
- Maintenance requests various manufacturers via specification sheet
- Maintenance and supplier exchange information's multiple times
- Maintenance orders device and completes specification sheet in systems and possibly creates new material number for warehouse
- Maintenance plans device installation
- Maintenance installs device and performs complete initial commissioning with corresponding documentation
- Maintenance files documentation in "As Built" and updates "As Engineered" documentation




Maintenance Outlook



- 1) Digitize documentation (in brownfield plants) to achieve as-built as-engineered status** →
Data for maintenance is available digitally
 - a) For passive devices** – recording devices via photo recognition
 - b) smart devices (4..20 mA HART):** automatic generation of device data in information model from the field
 - c)** Scan all relevant Pdf's (like manuals, Certificates, ..) and transfer relevant information to digital data
- 2) Establish exchange platform with manufacturers** – digitally exchange digital information about process data and device data in a standardized format (e.g., digital nameplate, certificates, Ex and SIL parameters, maintenance measures/cycles)
- 3) Internal synchronization of all systems** (field devices, SAP, CAE, Plant Asset Management Systems, control systems)

AAS VENDOR

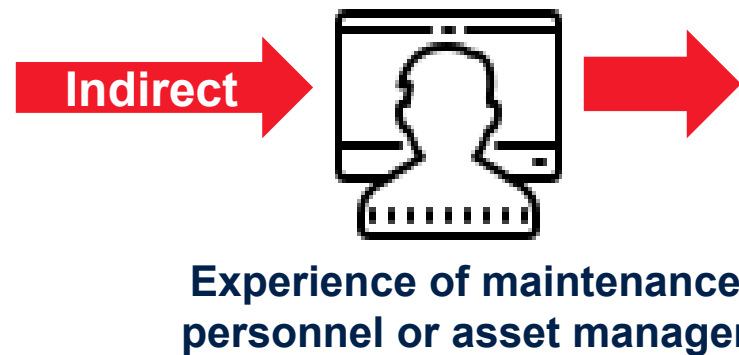


Manufacturer parameters


Manufacturer recommendations

Manuals

Legal requirements



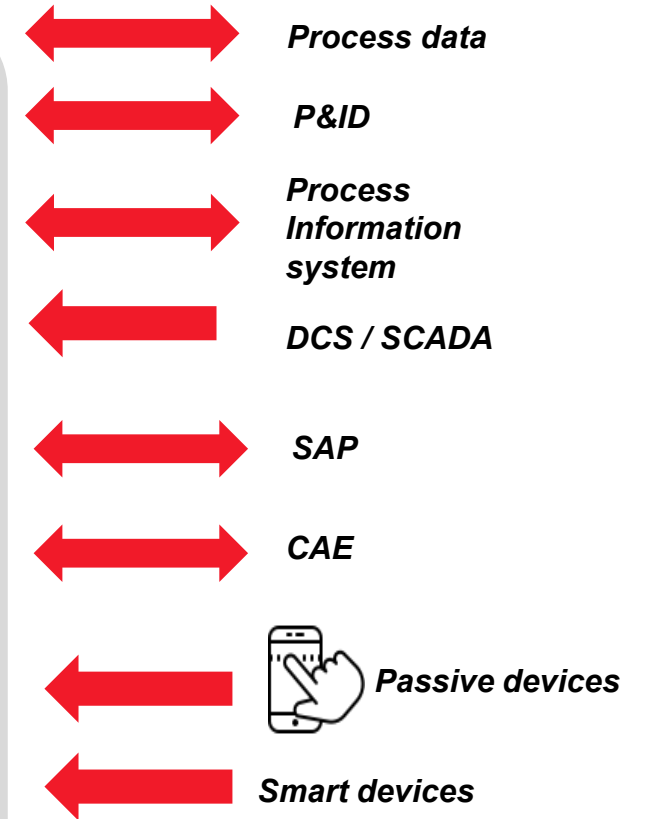
Data models



Technical Location

All hard data as name plate, material, serial number

Asset-specific information



03

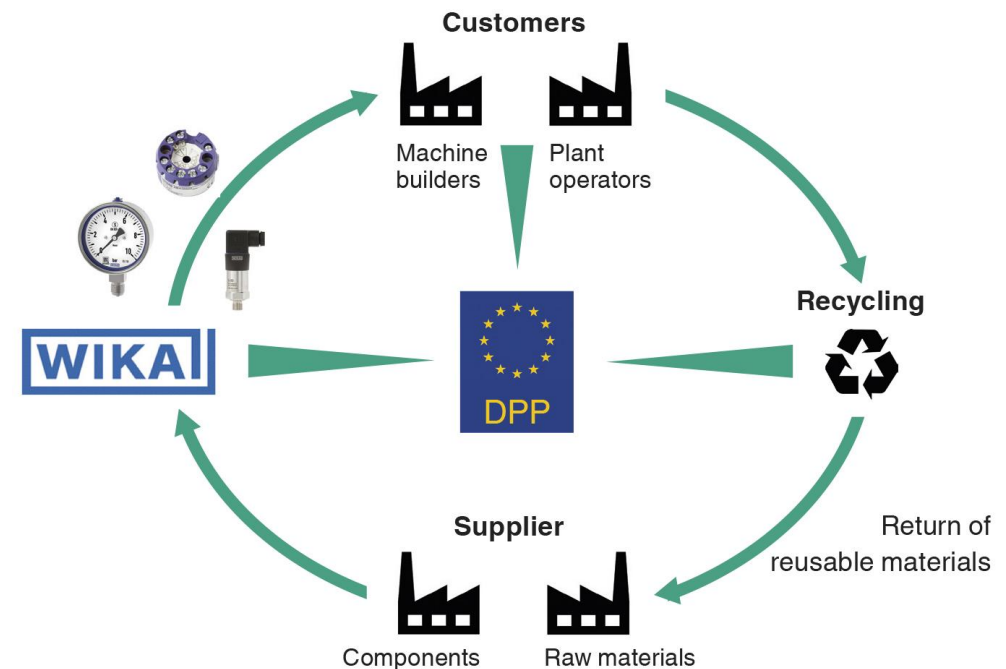
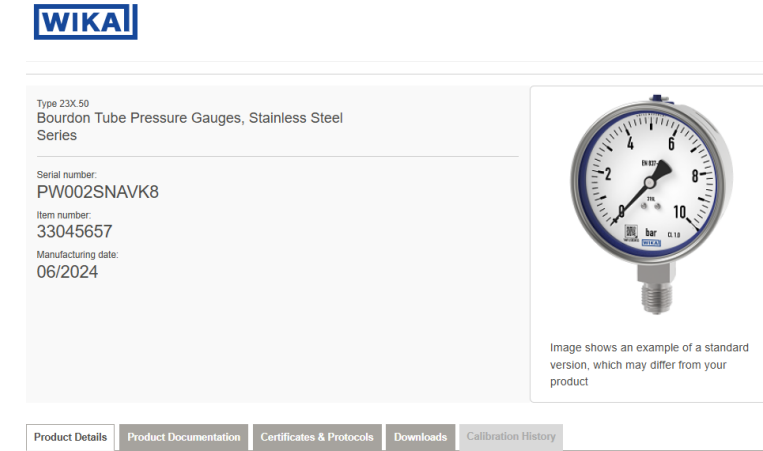
Data spaces for maintenance – Perspective from the manufacturers

Item Based Product Information Management



Current Status & Outlook

- **Identification Link (IEC 61406):** Standardized Identification, with manufacturer specific landing page & data content
- **DDC Consortium:** manufacturer independent “IEP-Information Exchange Platform”
- **Digital Product Passport (ESPR):** standardized “DPP system” for product life cycle data management
- **ZVEI + IDTA: “DPP4.0” system concept with AAS (IEC 63278)**
- **Process-X: process industry data space for “multi-lateral data sharing” (Platform Industry 4.0, Manufacturing-X)**



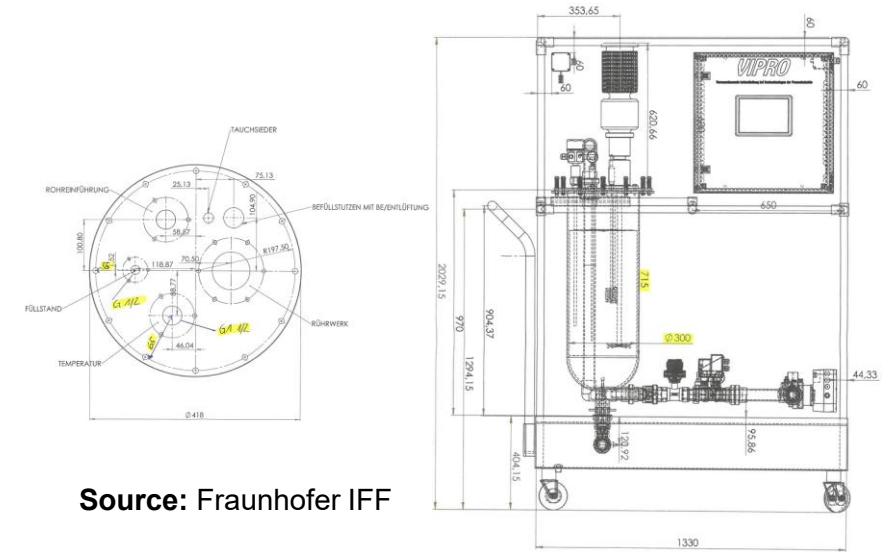
Use Case: device exchange (Project “KI-sy Twin”)



AI generated digital twin for Brownfield (4-20mA → 4-20mA/HART)

- Installed base: photo name plate, dimensional drawing, wiring diagram, P&ID...
→ Fraunhofer Tool: “AAS Submodel Generator” (DNP, Documentation)
- Manufacturer solution: AAS Submodels via API + data space (PoC)
- Submodel “Digital Nameplate”
- Submodel “Handover Documentation VDI2770”
- Submodel “Technical Data” → Standard structure + semantic e.g. ECLASS

→ “As-built” plant documentation of installed “equipment” refer to “functional place”



Source: Fraunhofer IFF

Data organisation for the digital twin

Typical data organization at major ERP/Technical systems



Bevorzugte Benennung	27-20-02-08 Temperaturmessung elektrisch komplett
Definition	Temperaturmessumformer, dessen Messfühler in Kontakt mit dem Medium oder dem Objekt steht, das gemessen werden soll
Schlagwörter	Wth (Widerstandsthermometer) Mantelwiderstandsthermometer Temperatur-Meßeinsatz (Widerstandsth.) Thermofühler (Widerstandsthermometer) PT 100-Fühler (Widerstandsthermometer) Widerstandsthermometer Oberflächenfühler Temperaturfühler (Widerstandstherm.)
IRDI	0173-1#01-AAB998#024

Technical Data

General Information

Product classifications

Product classification item

Classification system version: 15.0

Product class id: 27-20-02-08

Product classification system: ECLASS

Technical properties

min. operating temperature: -40°C

style of measuring transmitter: Head transmitter

upper range and value of failure signal: 21,5 mA (NAMUR up scale)

explosion protection marking: without

signal range of output: Transmitter Signalling of error: Down scale

design of cable screw connection: Standard gland, M20x1.5

lower range and value of failure signal: 3,5 mA (NAMUR down scale)

material: Material process connection and probe: Stainless steel 1.4571

Source: NAMUR, Gerd Schöbel (OI4 presentation, 07-2025)

Use Case: device exchange (IGR)



Hazardous area showcase

- ATEX: documentation → today mainly manual process
- Proof of Concept: individual ATEX Specification → via AAS submodel “Digital Nameplate”
- IDTA: submodel “Explosion protection” – coming soon

→ Automated proof of intrinsic safety

Source: IGR, Ronny Becker (IDEA4.0)

5. Specifications

Permissible temperature ranges

Temperature classes/surface temperatures for all variants **except** for UPT-2*-*|*-**-*X*****-4***** (model without cooling element):

Temperature class/surface temperature	Ambient and medium temperature (°C)
T5, T6	-40 ≤ Ta ≤ +60
T4	-40 ≤ Ta ≤ +80
T135 °C	-40 ≤ Ta ≤ +40 for Pi = 750 mW -40 ≤ Ta ≤ +70 for Pi = 650 mW -40 ≤ Ta ≤ +80 for Pi = 550 mW

Temperature classes/surface temperatures **only** for variant

UPT-2*-*|*-**-*X*****-4***** (model with cooling element, X can be substituted by 2 or 4):

Temperature class	Max. medium temperature (°C)	Ambient temperature (°C)
T4	120	-40 ≤ Ta ≤ +50
T3	150	-40 ≤ Ta ≤ +40

Safety-related characteristic values (Ex)		
Ex marking		
Connection values		
Max. voltage U _i	DC 30 V	
Max. current I _i	100 mA	
Max. power P _i (gas)	1,000 mW	
Max. power P _i (dust)	750/650/550 mW	
Effective internal capacitance C _i	11 nF	
Effective internal inductance L _i	100 µH	
Ambient temperature ranges		
Temperature class	T 135 °C	
Max. temperature	-40 °C ≤ T _a ≤ +40 °C	P _i 750 mW
	-40 °C ≤ T _a ≤ +70 °C	P _i 650 mW
	-40 °C ≤ T _a ≤ +80 °C	P _i 550 mW

IDTA

Outlook



“Asset health” Use case with NOA (KI-sy Twin)

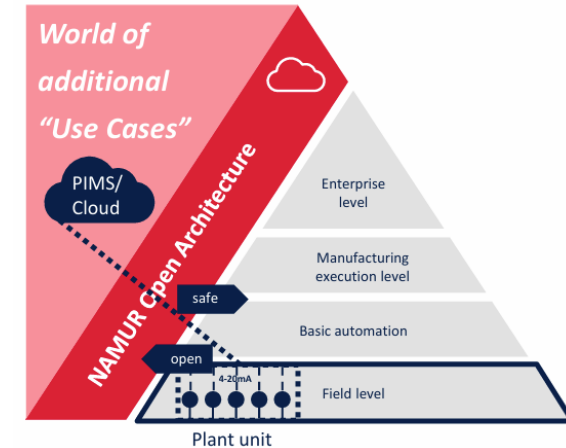
- NOA Gateway + HART Devices with FDI package
- Asset Management Software with PA-DIM data mapping

→ “Vital data” like NE107 Status for Asset Health

Upcoming product life cycle topics (IDTA)

- Submodel “PCF-Product Carbon Footprint” e.g. DPP requirement
- Submodel “PCN-Product Change Notification” e.g. CRA Software update management (see also NE53)
- Submodel “Safety components for the Process Industry”
- Submodel “DCC-Digital Calibration Certificate”

→ AAS / data spaces for more efficient and save processes and to fulfil upcoming EU regulations



Source: NAMUR, Michael Pelz (PI-Konferenz, 2025)



Submodel Template	IDTA Number	Version	Status	Downloads & Links
Carbon Footprint	02023	1.0	Published	Download
Submodel Template Product Change Notifications for Industrial product types and items in manufacturing	IDTA Number 1 02036	Version 1.0	Status In Review	Downloads & Links Coming soon
Submodel Template SIS component for the process industries	IDTA Number 1 02079	Version 1.0	Status In Development	Downloads & Links Coming soon

04

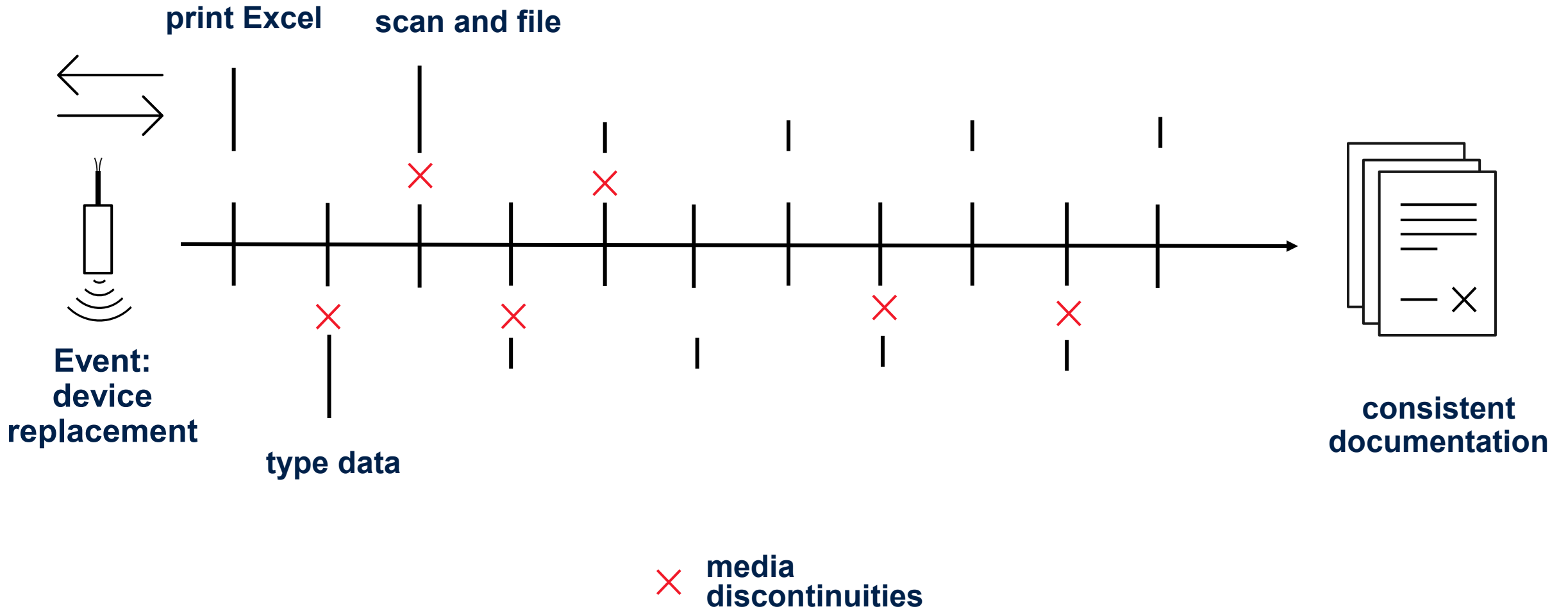
**digitized \neq digital –
Perspective from a CAE
software developer**

digitized ≠ digital

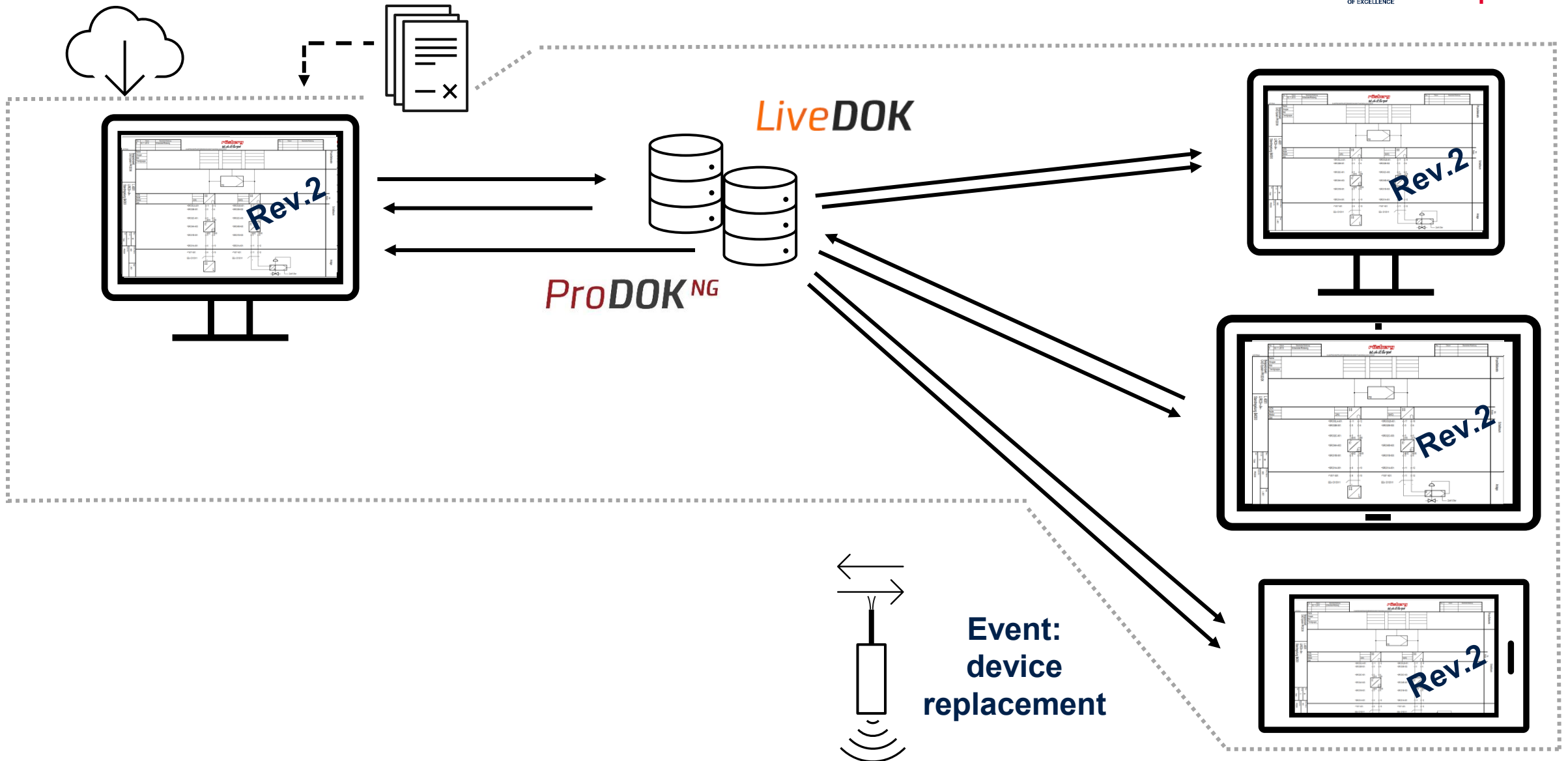
- **digitized** - An analog form or process has been converted into a digital file format (e.g., PDF, Excel). The work steps remain manual; the file is digital, but the process is not.
- **digital** - The process was mapped natively in software (e.g., UI + database). Data collection, validation, and further processing are automated and integrated into the system.

common practice

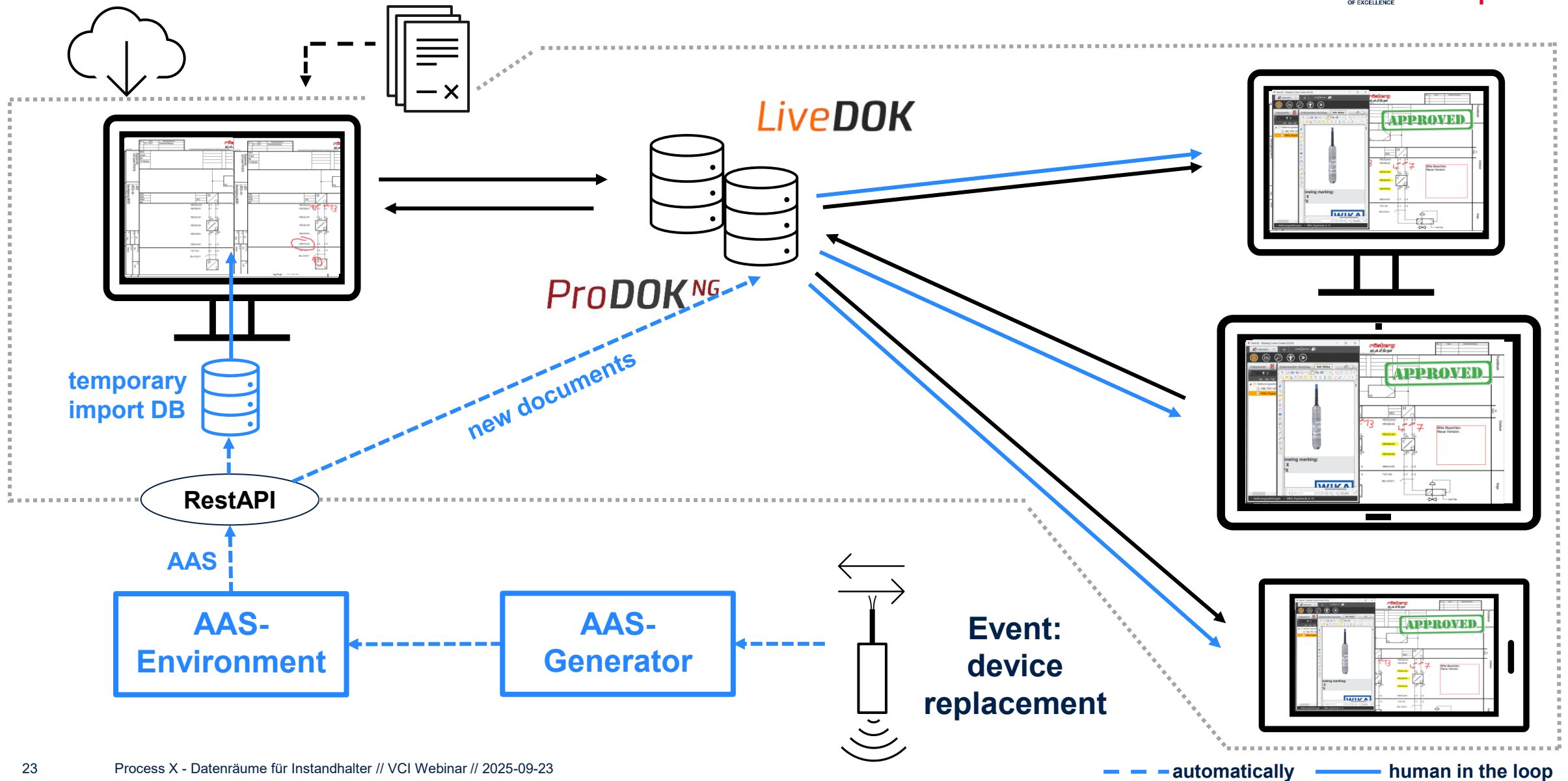
workflow



current status - ProDOK and LiveDOK



ProDOK and LiveDOK with KI-sy Twin



Outlook

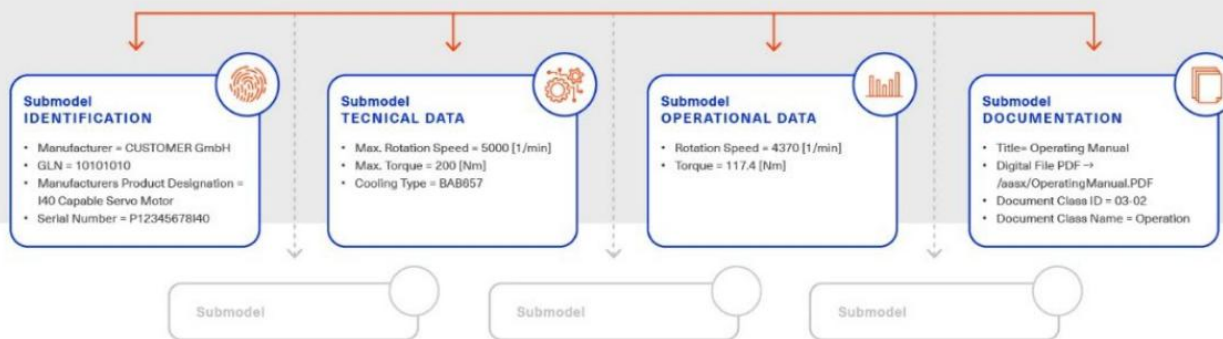
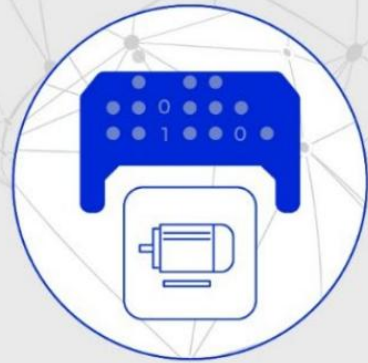


- Reduction of effort in a DIGITAL process
- Automatic provision of documents and data
- Faster updating of operator documentation
- Failure reduction

03

AAS and Data Space a deep dive

AAS – What's inside?



- Container with different content also custom data models
- Different submodels for different purposes and different life phases of an asset
- A the moment 100 different submodel templates

<https://industrialdigitaltwin.org/content-hub/teilmodelle>

https://industrialdigitaltwin.org/wp-content/uploads/2025/07/IDTA_AAS-Quick-Start-Guide.pdf

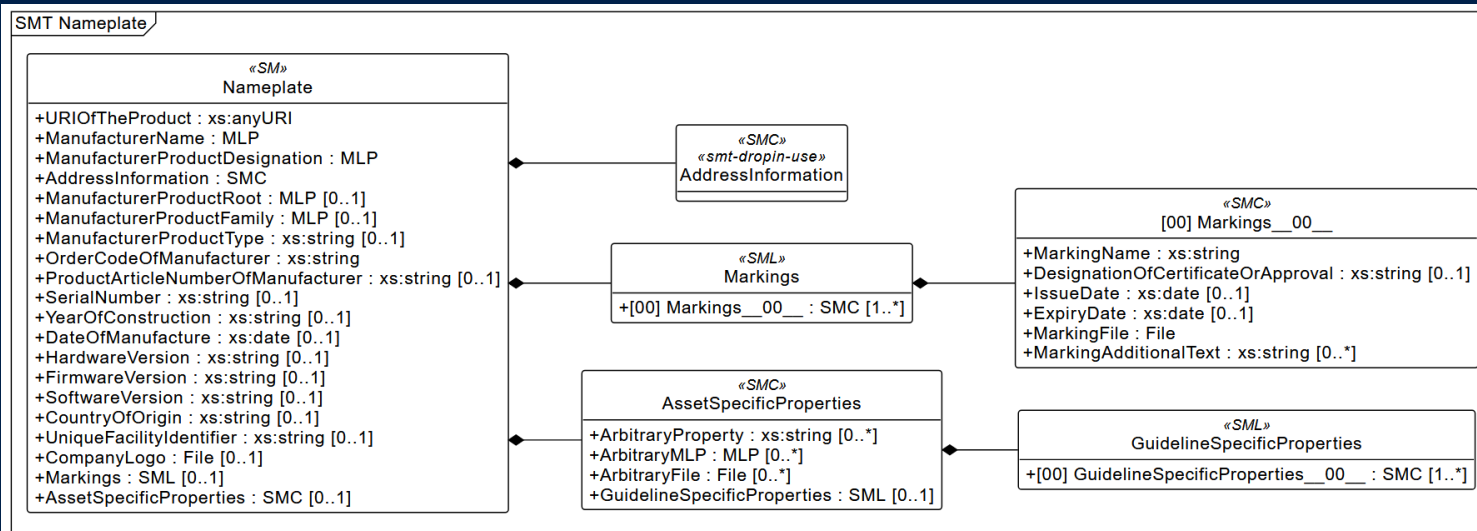
SMT: Digital Nameplate for Industrial Equipment



- Basic submodel for the identification of a physical assets

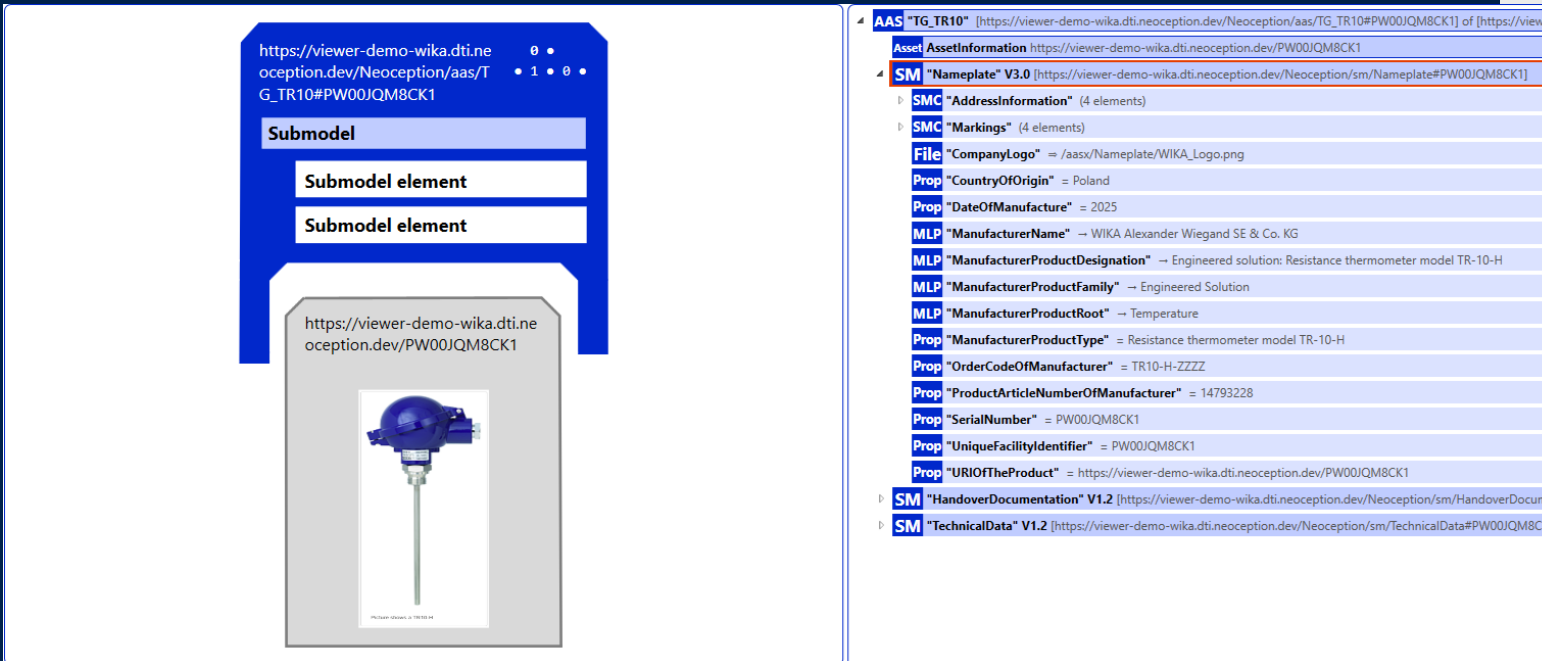
- <https://github.com/admin-shell-io/submodel-templates/tree/main/published/Digital%20nameplate/3/0>

- https://industrialdigitaltwin.org/wp-content/uploads/2024/11/IDTA-02006-3-0_Submodel_Digital-Nameplate.pdf



https://industrialdigitaltwin.org/wp-content/uploads/2024/11/IDTA-02006-3-0_Submodel_Digital-Nameplate.pdf

SMT: Digital Nameplate for Industrial Equipment

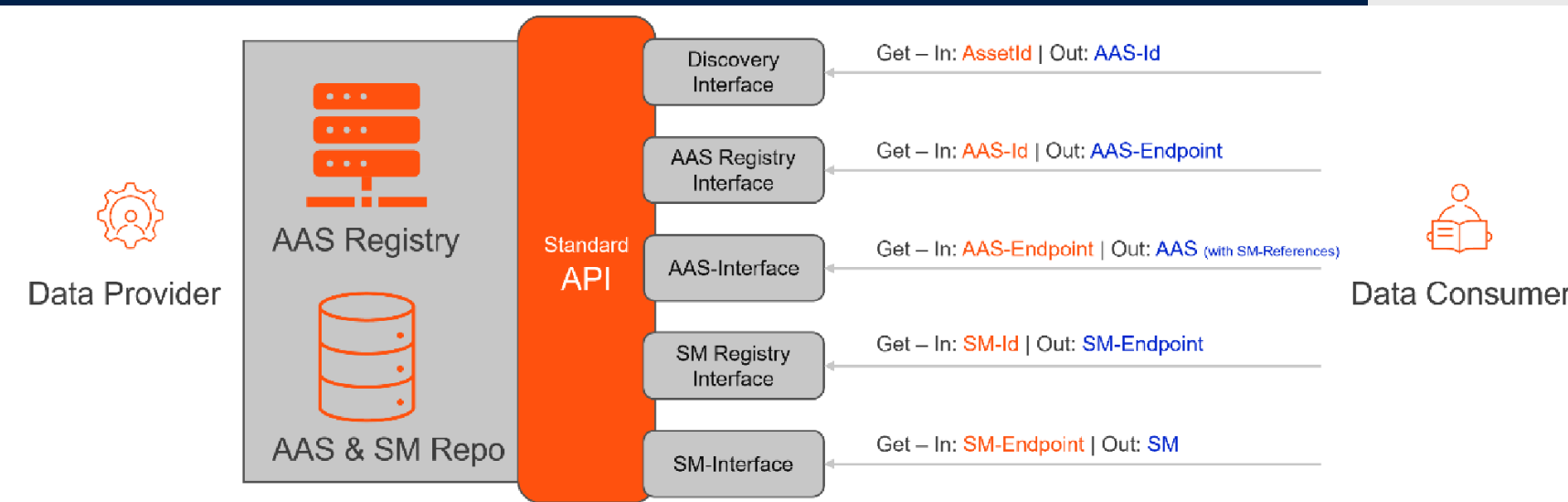


The screenshot displays a digital nameplate interface. On the left, a submodel structure is shown with a URL: `https://viewer-demo-wika.dti.neoception.dev/Neoception/aas/TG_TR10#PW00JQM8CK1`. Below this, a submodel element contains an image of a blue industrial thermometer. On the right, a detailed data table is visible, listing various properties and values for the asset.

Asset	AssetInformation
SM	"Nameplate" V3.0 [https://viewer-demo-wika.dti.neoception.dev/Neoception/sm/Nameplate#PW00JQM8CK1]
SMC	"AddressInformation" (4 elements)
SMC	"Markings" (4 elements)
File	"CompanyLogo" => /aasx/Nameplate/WIKA_Logo.png
Prop	"CountryOfOrigin" = Poland
Prop	"DateOfManufacture" = 2025
MLP	"ManufacturerName" → WIKA Alexander Wiegand SE & Co. KG
MLP	"ManufacturerProductDesignation" → Engineered solution: Resistance thermometer model TR-10-H
MLP	"ManufacturerProductFamily" → Engineered Solution
MLP	"ManufacturerProductRoot" → Temperature
Prop	"ManufacturerProductType" = Resistance thermometer model TR-10-H
Prop	"OrderCodeOfManufacturer" = TR10-H-ZZZZ
Prop	"ProductArticleNumberOfManufacturer" = 14793228
Prop	"SerialNumber" = PW00JQM8CK1
Prop	"UniqueFacilityIdentifier" = PW00JQM8CK1
Prop	"URIOfTheProduct" = https://viewer-demo-wika.dti.neoception.dev/PW00JQM8CK1
SM	"HandoverDocumentation" V1.2 [https://viewer-demo-wika.dti.neoception.dev/Neoception/sm/HandoverDocume...]
SM	"TechnicalData" V1.2 [https://viewer-demo-wika.dti.neoception.dev/Neoception/sm/TechnicalData#PW00JQM8CK1]

- Different specifications depending on the manufacturer
- Specific to a particular device or even just a device class
- Remodeling possible for brownfield plants using the physical nameplate
- Entry point for further submodels

AAS – more as a data container

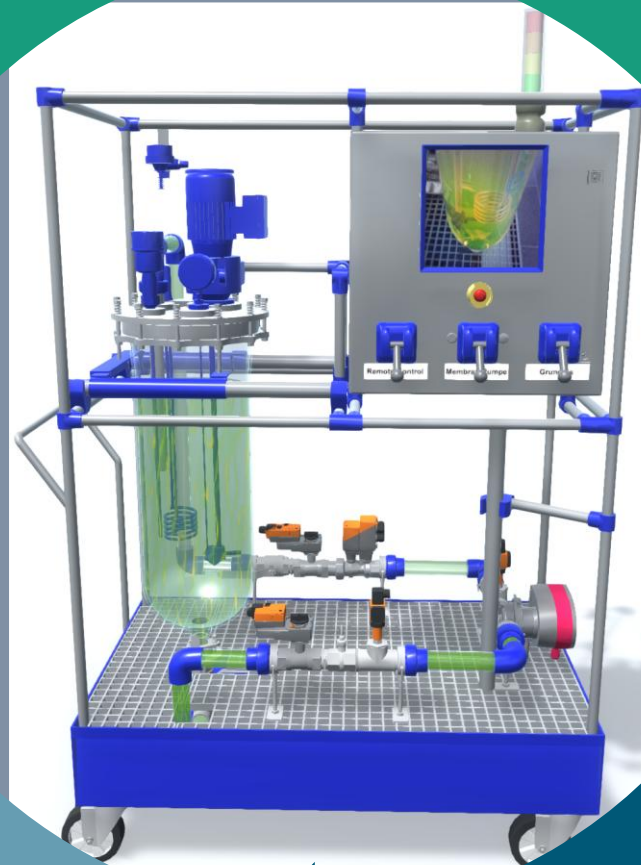


- Simple data container only as the first level
- Programming interface (API) with defined endpoints
- Interaction from different data sources with AAS
- Possible direct communication of assets with each other in the future

Manufacturer



Space



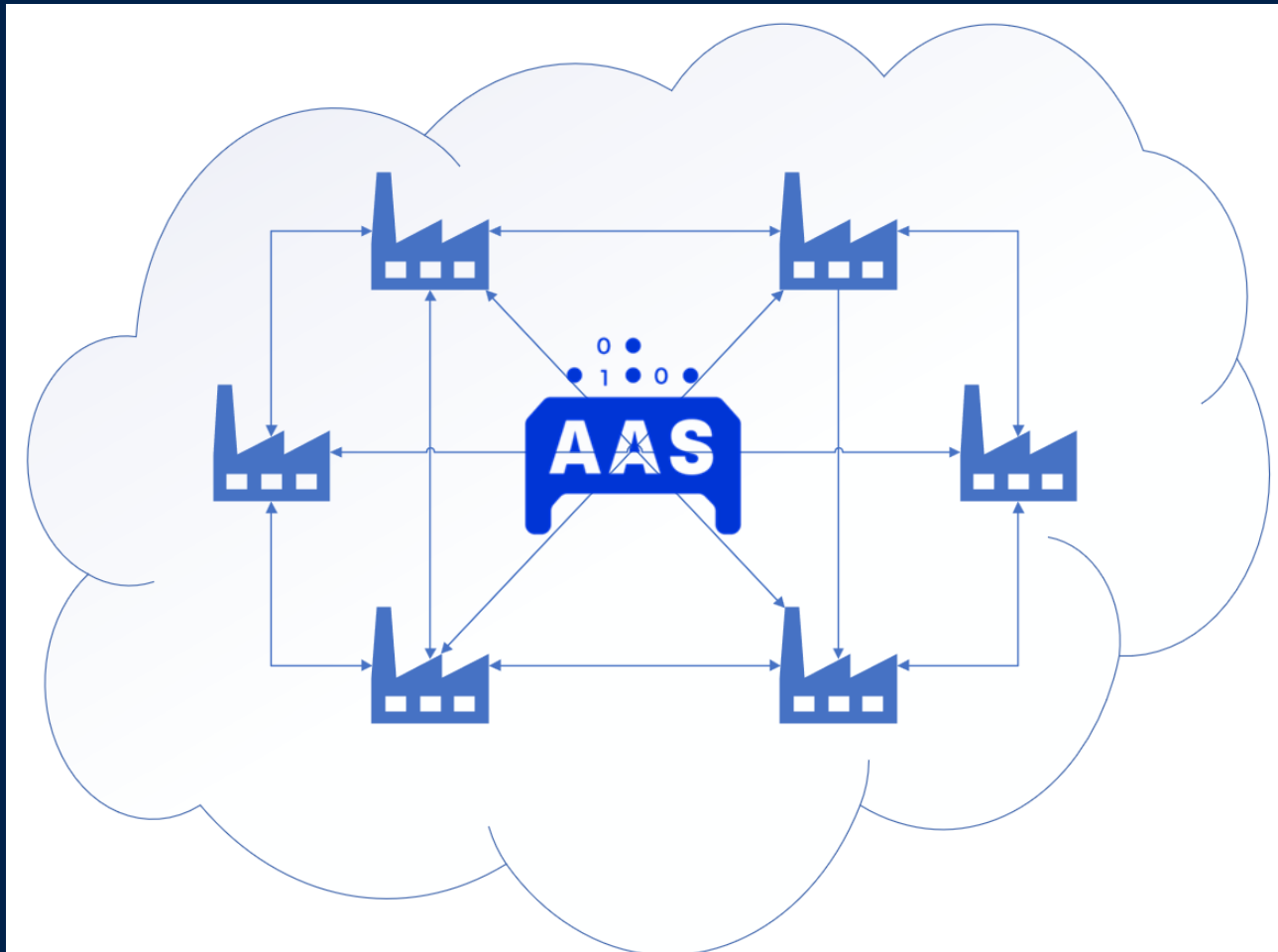
Customer

Operator



Data

Data Space – What could the future look like?



- **Various software stacks from different companies remain in place, but AAS is the communication standard.**
- **Reference from the asset administration shell to the data in the individual software**
- **Communication across companies based on the data space and using AAS as the file format**

Upcoming Webinar



November 2025 – Process-X:

Übersicht über technische Voraussetzungen für Datenräume

Dezember 2025 – Process X:

Use Case „KI-sy Twin” – Ausblick auf KI kombiniert mit Datenräumen

Time for questions

Process-X – Join the Data Space!



CURRENTA **ABB** **BASF**
We create chemistry

BAYER **Bayer** **PHOENIX CONTACT** **YNCORIS**
Always at your site.

VCI **LANXESS**
Energizing Chemistry

zvei **ROHNE**
electrifying ideas

IGR **SIEMENS** **rösberg**
Interessengemeinschaft Regelwerke Technik (IGR) e.V. Process Automation & IT Solutions

covestro **soft** **Leikon** **WIKAI**

IAT **RWTH AACHEN UNIVERSITY** **INVITE** Life Is On **Schneider Electric**

We got Space!



Thank you!



Process X Webpage



Process X@LinkedIn



Process X - Datenräume für
die Prozessindustrie // VCI
Webinar // 2025-07-10